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EXAMINER	
SONI, DEEPAK H	

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2668	

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Please find below and/or attached an Office communication concerning this application or proceeding.

AFC

Office Action Summary	Application No.	Applicant(s)	
	10/024,052	LIU ET AL.	
	Examiner	Art Unit	
	Deepak Soni	2668	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 December 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/17/2001*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

   (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims **1-16, 22 and 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Bender et al. (CDMA/HDR: A Bandwidth-Efficient High-Speed Wireless Data Service for Nomadic Users: IEEE Communication Magazine, July 2000) in view of Eichen et al. (U.S. 6,292,539) and in further view of Schneider et al. (U.S. 6,819,746).

Regarding Claim **1**, " calculating data communication speed of the communications channel based on records used for high-speed access qualification" Bender teaches means to accurately and rapidly estimate the channel conditions by mapping predicted SNR into one of the data rate modes of Table 1 as spoken of on page 73 paragraph 3, Bender does not teach records used for access qualification. Eichen teaches records stored in telecommunications providers database for subscriber loop services as spoken of on column 2, lines 49-55. The step of "determining an actual data communications speed of the communication channel", Bender teaches SNR value mapped to a value representing the maximum data rate as spoken of

on page 73 paragraph 3. The step of "comparing the calculated data communications speed and the actual data communication speed to determine if the records are accurate" not thought in Bender and Eichen. However Schneider teaches qualifying a new line, the information from previous line will be input into the expert system 17, from the database 14 for updated training. The expert system 17 will then use all available previous information to 'learn' about the process, adjust the weights in its system and provide the loop qualification result 18 as spoken of on column 9 lines 8-14. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to store the Bender Data Rate Table in Eichen telecommunications provider database and use Bender method to calculate SNR value to determine data rate of the channel and compare the calculated data speed to the actual data speed stored in Eichen telecommunications provider database. One of ordinary skill in the art would be motivated for doing so to reduce the time for determining which digital subscriber loop services a particular copper loop supports, from several hours to few minutes as spoken of on column 3, lines 27-29 of the Eichen et al reference.

Regarding claim **2**, Bender and Eichen do not teach "generating a value for updating the records in response to a difference between the calculated data communication speed and actual data communications speed." However Schneider teaches, the loop qualifying system also comprises an expert system coupled to the database. The expert system learns statements by

correlating the predetermined characteristic data to the know performance data as spoken of on column 4, lines 38-40. Schneider also teaches, the expert system applies the learned statements to the input characteristic data, to develop a performance prediction for the loop being qualified as spoken of on column 4, lines 42-45. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to update the data rate difference in Data Rate Table of Bender and store in Eichen telecommunications provider database. One of ordinary skill in the art would be motivated for doing so to reduce the time for determining which digital subscriber loop services a particular copper loop supports, from several hours to few minutes as spoken of on column 3, lines 27-29 of the Eichen et al reference.

Regarding claims **3 and 22**, Bender and Schneider do not teach "providing a user interface to display content of the records stored in the database" However Eichen teaches, a user may access server 100 through either the graphical user interface of client 194, e.g., a World wide web-based client, or character interface 190, e.g., a VT100 character interface as spoken of on column 4, lines 47-50. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use Eichen access to display the characteristic of the loop in question. One of ordinary skill in the art would be motivated for doing so to retrieve information regarding the loop as spoken of on column 5, lines 7 and 8 of Eichen reference.

Regarding claim **4**, Bender and Schneider do not teach "receiving user modification of the content of the records displayed in the user interface" However Eichen teaches receiving as input a unique identifier corresponding to the copper loop to be qualified for digital subscriber services (Figure 5. step 200) as shown in Figure 5 and spoken of on column 4, lines 63-66. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to provide means of receiving user modification displaying via user interface. One of ordinary skill in the art would be motivated for doing so to retrieve information regarding the loop as spoken of on column 5, lines 7 and 8 of Eichen reference.

Regarding claims **5 and 12**, "calculating the data communications speed of the communications channel comprises calculating the data communications speed of the Digital Subscriber Line subscriber loop", Bender teaches calculating of data communication speed of the communication channel. (See claim 1 explanation) Bender does not teach DSL subscriber loop. However, Eichen teaches digital subscriber loop technology and, more specifically, to the qualification of the existing twisted pair copper loops for digital subscriber loop service as spoken of on column 1, lines 6-9. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate Bender Data Rate Table into Eichen telecommunications provider database and pre determine the data rate capacities of the loops for high speed services. One of ordinary skill in the art would be motivated for

doing so to reduce the time for determining which digital subscriber loop services a particular copper loop supports, from several hours to few minutes as spoken of on column 3, lines 27-29 of the Eichen et al reference.

Regarding claims **6 and 24**, Bender and Schneider do not teach "determining the actual data communications speed comprises accessing a value in the Digital Subscriber Line access module" However Eichen teaches that various DSL technologies have complex signal attenuation restrictions that depend upon downstream and upstream bandwidth, modulation format, and receiver sensitivity for a particular chip set used by the vendor terminal endpoint equipment as spoken of on column 1, lines 59-64. At the time of the invention, it would have been obvious to a person of ordinary skill in the art that DSL module may be manufactured by various different vendor (such as Lucent, Teradyne ect.) which may determine the actual data communication speed the DSL module can support and therefor will require a way to identify chip set used on the DSL module. One of ordinary skill in the art would be motivated for doing so to reduce the time for determining which digital subscriber loop services a particular copper loop supports, from several hours to few minutes as spoken of on column 3, lines 27-29 of the Eichen et al reference.

Regarding claims **7 and 8**, Bender does not teach "accessing the records in a database system, the records containing at least one of the following information: insulation type of the cable included in the communications

channel" However Eichen teaches in step 240, the server queries topology database 120 using the unique loop identifier (e.g., TDN or IP address) to obtain a variety of loop topology data. In particular, the server requests length and gauge of wire on the loop for each loop segment, cable type, the location of load coils on the loop, and the location and length of bridge taps on the loop as spoken of on column 5, lines 66-67 and column 6, lines 1 and 2. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to associate these line characteristics with Bender Data Rate Table to determine the data communication speed of the channel. One of ordinary skill in the art would be motivated for doing so to reduce the time for determining which digital subscriber loop services a particular copper loop supports, from several hours to few minutes as spoken of on column 3, lines 27-29 of the Eichen et al reference.

Regarding claim **9**, "calculating the data communication speed of the communications channel based on the records comprises calculating the data communications speed of the communications channel based on the records indicating physical characteristics of the communication channel" Bender teaches calculating data communication speed of a channel as spoken of in explanation to claim 1 (See claim 1). Bender does not teach physical characteristics of the communication channel. However Eichen teaches physical characteristics of the communication channel as spoken of on column 5, lines 66-67 and column 6, lines 1 and 2. At the time of the

invention, it would have been obvious to a person of ordinary skill in the art to associate these line characteristics with Bender Data Rate Table to determine the data communication speed of the channel. One of ordinary skill in the art would be motivated for doing so to reduce the time for determining which digital subscriber loop services a particular copper loop supports, from several hours to few minutes as spoken of on column 3, lines 27-29 of the Eichen et al reference.

Regarding claim **10**, Bender does not teach "calculating the data communications speed further comprises determining electrical characteristics based on the records indicating physical characteristics of the communications channel" However Eichen teaches the system automatically queries telecommunications provider database records and/or requests measurements from network switching equipment or testing systems to obtain data regarding the twisted pair copper loop, such as loop length, electrical characteristics, and other loop topology characteristics such as wire gauge, the presence of load coils, and the presence of bridge taps. The system determines which digital subscriber loop services are available for the copper loop based on the combination of all data obtained as spoken of in Abstract. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to associate these electrical characteristics with physical characteristics of the channel in Eichen telecommunications provider database. One of ordinary skill in the art would be motivated for doing so to

reduce the time for determining which digital subscriber loop services a particular copper loop supports, from several hours to few minutes as spoken of on column 3, lines 27-29 of the Eichen et al reference.

Regarding claim **11**, Bender does not teach "calculating the data communications speed comprises causing test equipment to probe the communication channel to determine a length of the communication channel" However Eichen teaches in step 260 of Figure 5, the server requests measurements from metallic electrical test system 140, which is a remote test system such as 4TEL. The server requests a measure of loop length and/or loop capacitance, which can be converted to loop length using a known mathematical relationship as spoken of on column 6, lines 21-28. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use method of Eichen to determine length of channel. One of ordinary skill in the art would be motivated for doing so to reduce the time for determining which digital subscriber loop services a particular copper loop supports, from several hours to few minutes as spoken of on column 3, lines 27-29 of the Eichen et al reference.

Regarding claim **13**, "calculating an updated data communications speed of the communications channel based on the updated records" Bender teaches calculating of data communication speed of the communication channel (See claim 1 explanation). Bender does not teach "comparing the updated data communications speed with the actual data communications

speed to determine if a difference exists between the updated data communications speed and the actual data communications speed" However Schneider teaches qualifying a new line, the information from previous line will be input into the expert system 17, from the database 14 for updated training. The expert system 17 will then use all available previous information to 'learn' about the process, adjust the weights in its system and provide the loop qualification result 18 as spoken of on column 9 lines 8-14. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to store the Data Rate Table of Bender in Eichen telecommunications provider database and use Bender method to determine data rate of the channel and comparing updated data speed to the actual data speed and store the difference in Eichen telecommunications provider database. One of ordinary skill in the art would be motivated for doing so to reduce the time for determining which digital subscriber loop services a particular copper loop supports, from several hours to few minutes as spoken of on column 3, lines 27-29 of the Eichen et al reference.

Regarding claim **14**, Bender and Eichen do not teach "generating another value to update the records in response to the difference between the updated data communications speed and the actual data communications speed" However Schneider teaches, The expert system 17 actually accounts for unknown parameters by adjusting it hidden layers(s) to effectively match input data to output data for all known cases. As the database grows and/or is

updated, the expert system adjusts its internal algorithms to maintain the correlation of the actual outputs to the inputs as spoken of on column 9, lines 14-19. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to update the data rate difference in Data Rate Table of Bender and store in Eichen telecommunications provider database. One of ordinary skill in the art would be motivated for doing so to reduce the time for determining which digital subscriber loop services a particular copper loop supports, from several hours to few minutes as spoken of on column 3, lines 27-29 of the Eichen et al reference.

Regarding claim **15**, "calculating the data communication speed of a communications channel between customer premise equipment and an access module" Bender teaches means to accurately and rapidly estimate the channel conditions. The received SNR value is mapped to a value representing the maximum data rate such SNR can support for a given level of error performance. This channel state information, in the form of a data rate request, is then fed back to the AP via the reverse link data rate request channel (DCR) and updated as fast as every 1.67ms, as shown in Figure 2. The reverse link data request is a 4bit value that maps the predicted SNR into one of the data rate modes of table 1 as spoken of on page 73, paragraph 3. Bender and Eichen do not teach customer premise equipment and access module. However Schneider teaches A DSLAM or its modem cards, for example, may include a system to calculate the loop throughput based on the

modem communications between the DSLAM and the CPE as spoken of on column 8, lines 18-21. At the time of the invention, it would have been obvious to a person of ordinary skill in the art use method of Schneider to calculate speed between CPE that owned an operated by service provider and DSLAM (access module). One of ordinary skill in the art would be motivated for doing so to reduce the time for determining which digital subscriber loop services a particular copper loop supports, from several hours to few minutes as spoken of on column 3, lines 27-29 of the Eichen et al reference.

Regarding claim **16**, "calculating the data communications speed of the communication channel comprises calculating the data communications speed of a group of plural subscriber loops coupled to respective plural customer premise equipment." Bender teaches calculating of data communication speed of the communication channel. (See claim 1 explanation) Bender does not teach plurality of subscriber loop coupled to plural customer premise equipment. However Schneider teaches qualifying a loop with regard to digital subscriber line service in a network providing a plurality of levels of digital subscriber line service over a plurality of loops as spoken of on column 4, lines 29-31. At the time of the invention, it would have been obvious to a person of ordinary skill in the art use Benders method to calculate speed of a channel and combine with Schneider to calculate speed of plural subscriber loop couple to plural CPE. One of ordinary skill in

the art would be motivated for doing so to reduce the time for determining which digital subscriber loop services a particular copper loop supports, from several hours to few minutes as spoken of on column 3, lines 27-29 of the Eichen et al reference.

3. Claims **17-21, 23 and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable Schneider et al. (U.S. 6,819,746)

Regarding claim **17**, "at least one storage medium containing instructions that when executed cause one or more systems to" Schneider teaches a machine or computer readable medium and executable code carried by that medium as spoken of on column 20, lines 4 and 5. The step of "access records pertaining to characteristics of communication channel" (See Claim 1). The step of "determine variance between a predicted data communication speed of the communication channel based on the records and an actual data communication speed of the communication channel" (See Claim 1). The step of "update the records based on the determined variance." (See Claim 2)

Regarding claims **18 and 19**, "the instructions when executed cause the one or more systems to access " (See Claim 17). The step of "the records pertaining to the characteristics of a Digital Subscriber Line subscriber loop" Schneider teaches the expert system performs the service level prediction for a newly identified loop based on the cable make-up data of that loop and the system's `knowledge` of make-up and performance of existing loops that do and do not support xDSL service as spoken of on column 20, lines 4-11. At

the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the CPU to execute the instruction for line qualification and store line qualification in Schneider database. One of ordinary skill in the art would be motivated for doing so to build database of information characterizing loops providing xDSL service and information regarding the performance of those loops as spoken of on column 4, lines 1-3 of the Schneider et al reference.

Regarding claim **20**, "the instructions when executed cause the one or more systems to " (See Claim 17). The step of "access records pertaining to the characteristics of a group of Digital Subscribe Line subscriber loops, the communications channel comprising the group of Digital Subscribe Line subscriber loops" Schneider teaches qualifying a loop with regard to digital subscriber line service in a network providing a plurality of levels of digital subscriber line service over a plurality of loops as spoken of on column 4, lines 29-31. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the CPU to execute the instruction for group of lines for qualification and store line qualification in Schneider database. One of ordinary skill in the art would be motivated for doing so to build database of information characterizing loops providing xDSL service and information regarding the performance of those loops as spoken of on column 4, lines 1-3 of the Schneider et al reference.

Regarding claim **21**, "the instructions when executed cause the one or more systems to" (See Claim 17). The step of "further calculate the predicted data communications speed based on the records" Schneider teaches the expert system applies the learned statements to the input characters data, to develop a performance prediction of the loop being qualified as spoken of on column 4, lines 42-45. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the stored qualification of lines in Schneider expert system to determine the data communication speed. One of ordinary skill in the art would be motivated for doing so to build database of information characterizing loops providing xDSL service and information regarding the performance of those loops as spoken of on column 4, lines 1-3 of the Schneider et al reference.

Regarding claim **23**, "the instructions when executed cause the one or more systems to" (See Claim 17). The step of "update the records in response to user input of one or more updated values" Schneider teaches as the database grows and/or is updated, the expert system adjusts its internal algorithms as spoken of on column 9, lines 17-18. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to update the expert system. One of ordinary skill in the art would be motivated for doing so to build database of information characterizing loops providing xDSL service and information regarding the performance of those loops as spoken of on column 4, lines 1-3 of the Schneider et al. reference.

Regarding claim **25**, "the instructions when executed cause the one or more systems to" (See Claim 17). The step of "further perform a loop qualification process of the communications channel using the updated records to qualify the communications channel for Digital Subscribe Line data access" Schneider teaches record for an in-service loop includes characteristic data regarding the loop and performance data regarding capability of operation of DSL service over the loop. The loop qualifying system also comprises an expert system coupled to the database as spoken of on column 4, lines 33-38.

4. Claims 26 and 27, are rejected under 35 U.S.C. 103(a) as being unpatentable over Eichen et al. (U.S. 6,292,539) and in view of Schneider et al. (U.S. 6,819,746).

Regarding claim **26**, "an interface adapted to access records pertaining to characteristics of a communications channel" Eichen teaches user interface to access qualification of numerous loop as spoken of on column 4 lines 47-58 "a controller adapted to receive an estimated bandwidth of the communications channel that is calculated based on the records" Eichen teaches the system automatically queries telecommunications provider database records and or requests measurements from network switching equipment or testing systems to obtain information regarding the twisted pair copper loop in question as spoken of on column 2 lines 65-67 column 3 lines

1 and 2 "the controller adapted to receive an indication of an actual bandwidth of the communications channel" Eichen teaches the server makes the determination by querying service availability database 110 to determine weather the local telecommunications provider provides xDSL services from the office serving the customers location as spoken of on column 5 lines 12-16 " the controller adapted to update the records to reduce a variance between the calculated bandwidth and the estimated bandwidth." Eichen fails to teach update records. However Schneider teaches as the database grows and/or updated, the expert system adjusts its internal algorithms as spoken of on column 9, lines 17-18. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use Eichen user interface to execute and update records as in Schneider. One of ordinary skill in the art would be motivated for doing so to build database of information characterizing loops providing xDSL service and information regarding the performance of those loops as spoken of on column 4, lines 1-3 of the Schneider et al. reference.

Regarding claim **27**, "the communication channel comprises a Digital Subscriber Line Subscriber Loop" Schneider teaches qualifying subscriber loops for DSL line services as spoken of in column 1, lines 7-8. At the time of the invention, it would have been obvious to a person of ordinary skill in the art use Schneider qualifying subscriber loop for DSL subscriber loop. One of ordinary skill in the art would be motivated for doing so to reduce the time for

determining which digital subscriber loop services a particular copper loop supports, from several hours to few minutes as spoken of on column 3, lines 27-29 of the Eichen et al. reference.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deepak Soni whose telephone number is 571-272-2816. The examiner can normally be reached on 9:00Am - 5:00Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Deepak Soni
Examiner
Art Unit: 2668

DS

Seema S. Rao 11/23/05

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